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**>Title:** IL0122687A1: FUNGICIDAL FORMULATION OF TEBUCONAZOLE DILUTED IN WATER CONTAINING A CRYSTALLIZATION INHIBITING ROSIN DERIVATIVE AND PROCESS FOR PREVENTING THE CRYSTALLIZATION THEREOF

**Derwent Title:** Crystallisation inhibition during spraying of fungicide solutions - consists of applying a tar product in solution containing tebuconazol ([Derwent Record](#))

**Country:** IL Israel**Kind:** A1 Application Laid open to Publ. insp. I (See also: IL0122687A0 )

High Resolution

**Inventor:** DAVID LUBETZKY; MICHAEL GERMAN;**Assignee:** MAKHTESHIM CHEMICAL WORKS LTD.  
[News, Profiles, Stocks and More about this company](#)**Published / Filed:** 2003-11-23 / 1997-12-21**Application Number:** IL1997000122687**IPC Code:** IPC-7: A01N 43/653; C07D 249/08;**ECLA Code:** None**Priority Number:** 1997-12-21 IL1997000122687**INPADOC Legal Status:**

Gazette date	Code	Description (remarks)	List all possible codes for IL
2008-01-22	KB +	Patents renewed	
2005-03-20	KB +	Patents renewed	
2004-05-12	FF +	Patents granted	

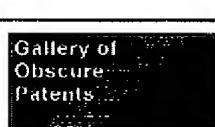
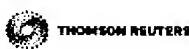
[Get Now: Family Legal Status Report](#)**Family:**

PDF	Publication	Pub. Date	Filed	Title
<input checked="" type="checkbox"/>	IL0122687A1	2003-11-23	1997-12-21	FUNGICIDAL FORMULATION OF TEBUCONAZOLE DILUTED IN WATER CONTAINING A CRYSTALLIZATION INHIBITING ROSIN DERIVATIVE AND PROCESS FOR PREVENTING THE CRYSTALLIZATION THEREOF
<input checked="" type="checkbox"/>	IL0122687A0	1998-08-16	1997-12-21	Novel crystallization inhibitors
<input checked="" type="checkbox"/>	BR9803583A	1999-10-05	1998-09-16	EMPREGO DE UM INIBIDOR DE CRISTALIZACAO DURANTE APLICACAO DE SOLUCOES AQUOSAS DE PULVERIZACAO CONTENDO O FUNGICIDA TEBUCONAZOL, PROCESSO PARA IMPEDIR A CRISTALIZACAO DO FUNGICIDA TEBUCONAZOL E FORMULACAO PESTICIDA DE TEBUCONAZOL

3 family members shown above

**Other Abstract Info:**

None

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מדינת ישראל  
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חוק הפטנטים, התשכ"ז- 1967  
Patents Law, 5727 - 1967

# תעודת פטנט

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תאריך הבקשה: 21/12/1997  
שם האמצאה:

FUNGICIDAL FORMULATION OF  
TEBUCONAZOLE DILUTED IN  
WATER CONTAINING A  
CRYSTALLIZATION INHIBITING  
ROSIN DERIVATIVE AND PROCESS  
FOR PREVENTING THE  
CRYSTALLIZATION THEREOF

פורמולציה קווטל-פטריות של  
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רוזין מונעת התגבשות ותהליך למניעת  
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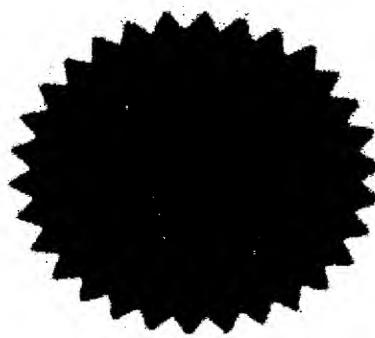
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באר שבע 84100

ממציא (ים):  
MICHAEL GERMAN  
דוד לובצקי

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מצחיאת:  
David Lubetzky  
דוד לובצקי  
Michael German  
MICHAEL GERMAN



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חוק הפטנטים, תשכ"ז-1967

Patent Law, 5727 - 1967

**בקשה לפטנט**

Application for Patent

אני, (שם המבקש, מוננו ולגבי נספף מואגד - מקום התאגדותה)

I. (Name and address of applicant, and in case of body corporate-place of incorporation)  
Makhteshim Chemical Works Ltd.  
A Company Registered in Israel  
Industrial Zone, P.O.Box 60  
Beer Sheva 84100

מקתשים מפעליים כימיים בע"מ  
חברה רשומה בארץ  
אזור תעשייה, ת.ד. 60  
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וזהליק למוניית התגבשותה

(בעברית)  
(Hebrew)

FUNGICIDAL FORMULATION OF TEBUCONAZOLE DILUTED IN  
WATER CONTAINING A CRYSTALLIZATION INHIBITING ROSIN DERIVATIVE  
AND PROCESS FOR PREVENTING THE CRYSTALLIZATION THEREOF

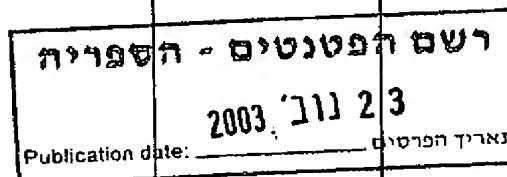
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מבקש בזאת כי ינתן לי ניליה פטנט

דרישה זו קדימה  
Priority Claim

*בקשות חילוקה - Application of Division	*בקשות פטנט נוסף - Application for Patent Addition	מספר/סימן Number/Mark	תאריך Date	מדינה האינז'ז Convention Country
*מבקש פטנט from Application מספר _____ dated _____	*לבקשת פטנט to Patent/App. מספר _____ dated _____			
*ייפוי כה: כללי / 개인ית - דוחה / מוחזק P.O.A.: general / individual attached / to be filed later הוגש בענין _____ filed in case _____ IL 122964				
המען למסירת מסמכים בישראל Address for Service in Israel כעם מושקין מחלקת קניין רוחבי ת.ד. 1646 עומר 84965 מספרנו: 4.057(IL)				
החותמת המבקש Signature of Applicant For the Applicant NOAM MUSHKIN By: <i>Noam M. Shkin</i>				
היום 18 בחודש 12 שנת 1997 of the year This לשימוש הלישכה For Office Use				



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פורמולציה קוטל-פטריות של טבוקונזול מזריל במים המכיל נגזרת רוזין מונעת התגבשות ותהייה למניעת התגבשותה

FUNGICIDAL FORMULATION OF TEBUCONAZOLE DILUTED IN  
WATER CONTAINING A CRYSTALLIZATION INHIBITING ROSIN DERIVATIVE  
AND PROCESS FOR PREVENTING THE CRYSTALLIZATION THEREOF

## INTRODUCTION

The present invention relates to the new use of rosin and rosin derivatives for preventing the crystallization during application of aqueous spray liquors based on tebuconazole fungicidal active compound. The present invention more particularly concerns the use of rosin and rosin derivatives, to prevent the crystallization of the triazole fungicide, tebuconazole from certain of its formulations.

## BACKGROUND OF THE INVENTION

Spray apparatuses which are usually employed for applying aqueous formulations of plant treatment agents contain several filters and nozzles. Thus, for example, there are suction filters between the suction component and tank pump, and furthermore pressure filters positioned in the pressure region downstream of the pump. Nozzle filters can also be present directly before the spray nozzles. All of these filters and the nozzles may be blocked to a greater or lesser extent by active compound which crystallizes out during application of aqueous spray liquors based on solid active compounds.

## OBJECTIVES OF THE INVENTION

It is the objective of the present invention to provide a novel formulation for the fungicide tebuconazole which prevents the crystallization of the active ingredient upon dilution prior to its use as sprays. It is a further objective of the present invention to provide a formulation of tebuconazole with markedly improved properties with a much lower tendency to crystallize out than in previously reported formulations of tebuconazole.

## SUMMARY OF THE INVENTION

We have found a new process for preventing the crystallization of the fungicide tebuconazole during the application of aqueous spray liquors thereof. The new process is characterized in that the crystallization inhibitor is chosen from the group consisting of rosin, rosin gum, hydrogenated rosin, and polymerized rosin gum. The new process yields a fungicide with markedly improved properties and with a much lower tendency to crystallize.

The ratio of crystallization inhibitor to tebuconazole fungicide of the new process is in the range of 0.05 to 25 to 5 to 20, preferably 0.1 to 5 to 2 to 15, and most preferably 0.1 to 1 to 1 to 10.

This invention further relates to a fungicidal formulation of tebuconazole diluted in water (aqueous spray liquor) containing a crystallization inhibitor selected from the group consisting of rosin, rosin gum, hydrogenated rosin and polymerized rosin. The new tebuconazole formulation is based on a ratio of crystallization inhibitor to tebuconazole in the range of 0.05 to 25 to 5 to 20, preferably 0.1 to 5 to 2 to 15, and most preferably 0.1 to 1 to 1 to 10.

This formulation may also contain various additives such as surface active substances, emulsifiers, polaric solvents with or without water, and the like. The formulations of the present invention are stable under the conventional testing conditions such as cold, hot and room storage conditions.

EXAMPLE 1

Formulation A containing 250 g/l of Tebuconazole having the following composition:

Tebuconazole tech 98.8%-	253 g
Surfactant soprofor 14/R-	90 gr
Surfactant witconol NS-500-LQ-	80 gr
Gum Rosin pale w/w-	160 gr
Dipropylene glycol-	70 gr
Soft water-	120 gr
N-Methyl-Pyrrolidone(NMP)	up to 1000 ml

was prepared by the following procedure:

160 gr of gum rosin, 70 gr of dipropylene glycol, and 61 gr of NMP were mixed while being heated to approximately 100°C. The mixing continued until full solubilization of the rosin. Approximately 20 min after solubilization the solution was cooled to 50°C and to this solution the rest of the additives and the tech. tebuconazole were added. This mixture was stirred for an additional 20 min until a clear solution obtained.

A comparative formulation B having the following composition:

Tebuconazole tech 98.8%-	253 gr
surfactant soprofor 14/R-	90 gr
Surfactant witconol NS-500LQ-	80 gr
Dipropylene glycol-	70 gr
Soft water-	120 gr
NMP-	up to 1000 ml

Each of the above formulations were diluted in water to 0.5%. (CIPAC-D, equivalent to 342 ppm hardener and a temperature of 30°C) and stirred by magnetic stirrer at 300 r.p.m. for 30 minutes and then sieved on a 400 mesh screen. The aqueous emulsion according to Formulation A showed no crystals remaining on the screen while the aqueous emulsion according to Formulation B had crystals which remained on the screen.

The emulsion stability of both above describe formulations were run by diluting with water to 0.5% without stirring keeping the temperature at 30°C in 100 ml cylinders. The two cylinders were allowed to stand without shaking or mixing for 2 hours. While the emulsion according to formulation A was free from sediment and crystals, the emulsion according to formulation B showed a considerable amount of needle-like crystals.

CLAIMS

1. A process for preventing the crystallization of the fungicide tebuconazole during the application of aqueous spray liquors characterized in that the crystallization inhibitor is chosen from the group consisting of rosin, rosin gum, hydrogenated rosin, and polymerized rosin.
2. A process according to Claim 1 wherein the ratio of crystallization inhibitor to tebuconazole fungicide is 0.05 to 25 to 5 to 20, preferably 0.1 to 5 to 2 to 15, and most preferably 0.1 to 1 to 1 to 10.
3. A fungicidal formulation of tebuconazole diluted in water (aqueous spray liquor) containing a crystallization inhibitor selected from the group consisting of rosin, rosin gum, hydrogenated rosin and polymerized rosin.
4. A formulation according to Claim 3 wherein the ratio of crystallization inhibitor to tebuconazole is 0.05 to 25 to 5 to 20, preferably 0.1 to 5 to 2 to 15, and most preferably 0.1 to 1 to 1 to 10.
5. A formulation according to Claim 3 containing:
  - (a) 2 to 25 parts by weight of tebuconazole; and
  - (b) 1.5 to 25 parts of weight of the crystallization inhibitor.

For the Applicants  
Noam Mushkin  
By: 